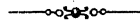


EIGHTEENTH
ANNUAL CATALOGUE
OF THE
OFFICERS AND STUDENTS
OF THE
State Agricultural College
OF
KANSAS.

1880-81.

MANHATTAN, KANSAS:
PRINTING DEPARTMENT, AGRICULTURAL COLLEGE.
1881.

Board of Regents.



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President of the Board.

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GEORGE T. FAIRCHILD, A. M., PRESIDENT,
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Professor of Elementary English and Mathematics.

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TIMOTHY T. HAWKES,
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Superintendent of Printing.

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Superintendent of Telegraphy.

MRS. MARY E. CRIPPS,
*Teacher of Household Economy and Hygiene,
Superintendent of Sewing.*

WILLIAM L. HOFER,
Teacher of Instrumental Music.

Students.

RESIDENT GRADUATES.

Grace M. Parker, Class of '80, *Manhattan, Riley.
Clarence E. Wood, Class of '79, Manhattan, Riley.

FOURTH YEAR.

*Flora Donaldson, Chelsea, Butler.
Emma Glossop, Manhattan, Riley.
Ulysses G. Houston, Manhattan, Riley.
*Fletcher M. Jeffery, Zeandale, Riley.
*William J. Jeffery, Zeandale, Riley.
Darwin S. Leach, Beloit, Mitchell.
*William J. Lightfoot, Jewell City, Jewell.
*Dalinda Mason, Delphos, Ottawa.
Wirt S. Myers, Iola, Allen.

THIRD YEAR.

Chester J. Allen, Beloit, Mitchell.
Bartholomew Buchli, Bismarck, Wabaunsee.
Emma Campbell, Manhattan, Riley.
May Campbell, Manhattan, Riley.
John J. Copley, Perryville, Jefferson.
Ida Cranford, Brookville, Saline.
Edward V. Cripps, Manhattan, Riley.
William J. Griffing, Manhattan, Riley.
James W. Hamilton, Florence, Marion.
Warren Knaus, Buffalo, Wilson.
Issie Lewis, Manhattan, Riley.
John L. McNair, Ashland, Riley.

*Post-office and county. State in Italics.

Lincoln H. Neiswender,	Silver Lake, Shawnee.
Edwin C. Paine,	Ivy, Lyon.
Allie S. Peckham,	Manhattan, Riley.
Henry Augustus Platt,	Manhattan, Riley.
Gracia H. Pope,	Wichita, Sedgwick.
Mark A. Reeve,	Americus, Lyon.
Belle Selby,	Garnett, Anderson.
Burton L. Short,	Crestline, Cherokee.
John A. Sloan,	Wakefield, Clay.
Chas. H. Stiles,	Pavilion, Wabaunsee.
Grace R. Strong,	Manhattan, Riley.
Julius T. Willard,	Wabaunsee, Wabaunsee.

SECOND YEAR.

Edgar A. Allen,	Beloit, Mitchell.
Viola I. Bacheller,	Lanark, Rush.
Charles F. Barrett,	Greenleaf, Washington.
James W. Berry,	Jewell City, Jewell.
George W. Boles,	Baxter Springs, Cherokee.
Mary C. Bower,	Manhattan, Riley.
Henry L. Call,	Wild Cat, Riley.
John H. Calvin,	Manhattan, Riley.
John W. Chenoweth,	Baxter Springs, Cherokee.
William A. Corey,	Plowboy, Shawnee.
George W. Cotton,	Rural, Jefferson.
Henry M. Cottrell,	Wabaunsee, Wabaunsee.
William H. Culter,	El Paso, Sedgwick.
Alvin J. Donaldson,	Chelsea, Butler.
Frank W. Dunn,	Goshen, Elkhart, <i>Indiana</i> .
Agnes M. Fairchild,	Manhattan, Riley.
Albert M. Foreman,	Randolph, Riley.
Phoebe E. Haines,	Manhattan, Riley.
Rudolph A. Hollenberg,	Hanover, Washington.
George E. Hopper,	Downs, Osborne.
Hortense Houston,	Manhattan, Riley.
Giles P. Howard,	Manhattan, Riley.
Cora M. Hunting,	Manhattan, Riley.
Edwin H. Kern,	Ionia, Jewell.
John Linder,	Manhattan, Riley.
John W. Lewis,	Manhattan, Riley.
Harriette B. Lightfoot,	Jewell City, Jewell.
Jacob Lund,	Alma, Wabaunsee.
Mattie E. Mails,	Blue, Pottawatomie.

M. H. Markcum,	Winfield, Cowley.
Charles Marlatt,	Manhattan, Riley.
May McConnell,	Menoken, Shawnee.
Margery McElroy,	Alma, Wabaunsee.
Katie I. McGuire,	Manhattan, Riley.
Charles Messenger,	Baltimore, Cowley.
Anna Moffitt,	Cottonwood Falls, Chase.
Dana Needham,	Lane, Franklin.
Amanda Noland,	Manhattan, Riley.
Amy E. Noyes,	Pavilion, Wabaunsee.
George C. Peck,	Junction City, Davis.
Hattie L. Peck,	Junction City, Davis.
Seward N. Peck,	Junction City, Davis.
May V. Quinby,	Wakefield, Clay.
Bettie Richards,	Manhattan, Riley.
Helen M. Short,	Crestline, Cherokee.
Mira A. Thrasher,	Manhattan, Riley.
Sarah E. Walden,	King City, McPherson.
Milan T. Ward,	Orion, Henry County, <i>Illinois</i> .
Albert O. Woods,	Wellington, Sumner.

FIRST YEAR.

James V. Aikins,	Hoyt, Jackson.
Ada Allis,	Virgil, Greenwood.
Emett Allis,	Virgil, Greenwood.
Edwin C. Anderson,	Manhattan, Riley.
Luella A. Anderson,	Manhattan, Riley.
Emert S. Andress,	Hanover, Washington.
Charles F. Bailey,	Weir City, Cherokee.
Lambert R. Bailey,	Toledo, Chase.
Nora Bailey,	Toledo, Chase.
Rachel M. Bayles,	Manhattan, Riley.
William F. Bayles,	Garrison, Pottawatomie.
Samuel B. Berry,	Bryant, Butler.
Frank W. Bevington,	Jewell City, Jewell.
Hattie Blades,	Junction City, Davis.
Lester T. Boutwell,	Wakefield, Clay.
Thomas P. Bowen,	Garnett, Anderson.
Jasper E. Brady,	Leavenworth, Leavenworth.
Andrew C. Branch,	Sterling, Rice.
John J. Breakbill,	Manhattan, Riley.
George H. Brown,	Wakefield, Clay.
Grace A. Brown,	Manhattan, Riley.

George A. Browning,	Manhattan, Riley.
Fidelia Brumbaugh,	Madison, Greenwood.
James T. Bryson,	Cheever, Dickinson.
Victor Hugo Calvin,	Manhattan, Riley.
Benjamin G. Campbell,	Manhattan, Riley.
Clara F. Castle,	Newbury, Wabaunsee.
Charles Clark,	Minneapolis, Ottawa.
Frank C. Clark,	Solomon Rapids, Mitchell.
Mary L. Clarke,	Manhattan, Riley.
Adella E. Clayton,	Solomon City, Dickinson.
Florence M. Clayton,	Bennington, Ottawa.
George L. Clothier,	Alma, Wabaunsee.
Jennie Coburn,	Salina, Saline.
Rebecca Coburn,	Salina, Saline.
Metta Comer,	Havensville, Pottawatomie.
George B. Conklin,	Whiting, Jackson.
Jabez A. Cooper,	Wild Cat, Riley.
William E. Cooper,	Wild Cat, Riley.
Charles M. Cope,	Emporia, Lyon.
Riley W. Coran,	Fort Scott, Bourbon.
Julia E. Cowell,	Wakefield, Clay.
Albert Deitz,	Kansas City, Wyandotte.
Carrie F. Donaldson,	Manhattan, Riley.
George T. Donaldson,	Chelsea, Butler.
Florence A. Donaldson,	Manhattan, Riley.
Robert H. Drummond,	Woodhull, Chase.
Hampton S. Evans,	Rural, Jefferson.
John P. Everett,	Gardner, Johnson.
Ida L. Failyer,	Sedan, Chautauqua.
Edwin M. Fairchild,	Manhattan, Riley.
Ida A. Ferguson,	Manhattan, Riley.
Mary J. Fisher,	Empire Prairie, Andrew, Mo.
Julia Y. Fisher,	Whitesville, Andrew, Mo.
George W. Fowler,	Medina, Jefferson.
Joseph W. Franklin,	Toledo, Chase.
Jay D. Freeman,	Jewell City, Jewell.
Sidney Freeman,	Sheffield, Lorain, Ohio.
Charles H. Frisbie,	Grantville, Jefferson.
Richard K. Gamble,	Wakarusa, Shawnee.
Bessie E. Gemeny,	Junction City, Davis.
Xura A. Gibbs,	Wild Cat, Riley.
Mary Griffing,	Manhattan, Riley.
Frank Hall,	Lyons, Rice.
Emma Harvey,	Vinton, Riley.
Alvah Haworth,	Boston Mills, Cherokee.
Jessie E. Heathman,	Sigel, Douglas.
Abraham L. Helmick,	Weir City, Cherokee.

Eli A. Helmick,	Weir City, Cherokee.
Charles Hodges,	Winfield, Cowley.
Lucy B. Hopper,	Downs, Osborne.
George L. Horning,	Grantville, Jefferson.
Henry J. Horning,	Grantville, Jefferson.
Charles E. Houston,	Elmdale, Chase.
Hattie L. Howard,	Kingsville, Shawnee.
Anna Hunt,	Columbus, Cherokee.
Hattie Hunter,	Manhattan, Riley.
Edgar M. Hutto,	Manhattan, Riley.
Franklin A. Hutto,	Manhattan, Riley.
Elnora Ingraham,	Manhattan, Riley.
Nathaniel A. Ingram,	Grantville, Jefferson.
John L. Johnson,	Waushara, Lyon.
William C. Johnston,	Hoyt, Jackson.
Thomas O. Kay,	Olesberg, Pottawatomie.
Mary A. Kennett,	Milford, Davis.
Albert E. Kopp,	North Topeka, Shawnee.
Ray L. Lamar,	Bridgeport, Saline.
Marion M. Lewis,	Stockdale, Riley.
Andrew D. Litson,	Benton, Butler.
Cora B. Long,	Ellsworth, Ellsworth.
Georgia I. Long,	Ellsworth, Ellsworth.
Alma Lucas,	Menoken, Shawnee.
Ferd C. Lynch,	Manhattan, Riley.
Angie Mackey,	Junction City, Davis.
Ella Mackey,	Junction City, Davis.
Katie Markcum,	Winfield, Cowley.
Anna A. Marshall,	Manhattan, Riley.
Warren Marshall,	Zeandale, Riley.
Willis Marshall,	Zeandale, Riley.
Michael McAnerney,	Sulivans, Jackson.
George G. McConnell,	Menoken, Shawnee.
Arthur J. McDowell,	Eskridge, Wabaunsee.
John C. McElroy,	Alma, Wabaunsee.
Libbie A. McElroy,	Alma, Wabaunsee.
William J. McHenry,	Medina, Jefferson.
William B. McKeage,	Hoyt, Jackson.
Charles McKerlie,	Sturgis, St. Joseph, <i>Michigan</i> .
Orman A. McMullen,	Boston Mills, Cherokee.
Laura Meacham,	Manhattan, Riley.
William H. Meek,	Galva, McPherson.
James Miller,	Eldorado, Butler.
Thomas W. Miller,	Peach Grove, Clay.
Napoleon B. Montz,	Pipe Creek, Ottawa.
Alyson R. Moore,	Chapmanville, Clay.
David J. Moore,	Chapmanville, Clay.

Mary E. Moses,	Manhattan, Riley.
William L. Murphy,	Wild Cat, Riley.
Lyman T. Nelson,	Wakarusa, Shawnee.
Mary Noland,	Manhattan, Riley.
Arthur L. Noyes,	Pavilion, Wabaunsee.
Carrie O'Meara,	Onaga, Pottawatomie.
Orlando G. Palmer,	Jewell City, Jewell.
William C. Palmer,	Jewell City, Jewell.
Anna Patterson,	Manhattan, Riley.
Andrew W. Patterson,	Granby, Newton, <i>Missouri</i> .
Roscius K. Peck,	Junction City, Davis.
Charles S. Pence,	North Topeka, Shawnee.
Ida Pence,	North Topeka, Shawnee.
William Phillips,	Garrison, Pottawatomie.
Clarence T. Pilkenton,	WaKeeney, Trego.
Emory Melzar Platt,	Manhattan, Riley.
Edward A. Poirier,	Wathena, Doniphan.
Lawrence Poirier,	Wathena, Doniphan.
Fred O. Popenoe,	Topeka, Shawnee.
Elias L. Pound,	Manhattan, Riley.
James Pringle,	Harveyville, Wabaunsee.
James H. Prothrow,	Wilmington, Wabaunsee.
John W. Randall,	Winfield, Cowley.
William Richards,	Manhattan, Riley.
Frank E. Richardson,	Waushara, Lyon.
William E. Rorick,	Perry, Jefferson.
James L. Rogers,	Hanover, Washington.
Austin Roush,	Wilmington, Wabaunsee.
Francis E. Ruggles,	Jewell City, Jewell.
Clara Sampson,	Sutphan Mills, Dickinson.
Willis O. Schantz,	Ontario, Jackson.
Harry M. Sneder,	Ada, Ottawa.
Richard C. Sneder,	Ada, Ottawa.
Grant Selby,	Garnett, Anderson.
Kate Selden,	Wabaunsee, Wabaunsee.
George K. Shanks,	Wabaunsee, Wabaunsee.
Emma L. Short,	Manhattan, Riley.
Melvin S. W. Skinner,	Gaylord, Smith.
Fannie C. Sloan,	Wakefield, Clay.
Albert E. Smith,	Washington, Washington.
John F. Stricker,	Martinsville, Clark.
Jerome Stuart,	Manhattan, Riley.
Samuel N. Swingley,	Turner, Wyandotte.
John B. Thompson,	Ingalls, Lincoln.
Walter M. Trevor,	Detroit, <i>Michigan</i> .
William C. Van Fossen,	Leavenworth, Leavenworth.
Frederick E. Wahl,	Manhattan, Riley.

Ella S. Walden,	Manhattan, Riley.
William S. Walden,	Manhattan, Riley.
Michael H. Waltrip,	Cheever, Dickinson.
Edward Ward,	North Topeka, Shawnee.
Beatrice B. White,	Manhattan, Riley.
John F. White,	Meriden, Jefferson.
Bertha E. Whitney,	Manhattan, Riley.
Frank Wilmarth,	Lincoln, Lincoln.
William Woodburn,	Wetmore, Nemaha.
Jeanette Wyland,	Jewell City, Jewell.
John W. Wyland,	Jewell City, Jewell.
Cameron C. Wylie,	Tabor, Clay.
Edwin B. Young,	Salina, Saline.
Robert H. Young,	Rockton, Wabaunsee.
Sumner J. Zerger,	Lazette, Cowley.

SELECT COURSE.

Sherman B. Kimberlin,	Ellis, Trego.
Edward L. Kingsbury,	Burlington, Coffey.
Alice McNair,	Manhattan, Riley.
Rowena J. Whaley,	Manhattan, Riley.
William E. Whaley,	Manhattan, Riley.
Carrie M. Williston,	Manhattan, Riley.

NUMBER OF STUDENTS.

Classes:	Gentlemen.	Ladies.	Total.
Resident Graduates	1	1	2
Fourth Year	6	3	9
Third Year	16	8	24
Second Year	29	19	48
First Year	124	54	178
Select Course	3	3	6
Total	179	88	267
Applicants not enrolled			14
Number of counties of Kansas represented			44
Number of other States represented			5

TERMS AND VACATIONS.

FALL TERM, 1881.

Thursday, September 8th.—College year begins. Examinations for admission at 8:30 A. M.

Friday, October 14th, and November 11th.—Monthly examinations.

Thursday and Friday, December 15th and 16th.—Examinations at close of Fall Term.

December 17th to January 2d.—Winter vacation.

WINTER TERM, 1882.

Tuesday, January 3d.—Winter Term begins. Examinations for admission, 9 A. M.

Friday, February 10th.—Monthly examinations.

Thursday and Friday, March 23d and 24th.—Examinations at close of Winter Term.

SPRING TERM, 1882.

Monday, March 27th.—Spring Term begins.

Monday and Tuesday, June 5th and 6th.—Examinations at close of the year.

June 4th to 7th.—Exercises of Commencement week.

Wednesday, June 7th, 10 A. M.—Commencement.

June 8th to September 14th.—Summer vacation.

FALL TERM, 1882.

Thursday, September 14th.—College year begins. Examinations for admission at 8:30 A. M.

Objects and Methods.

ENDOWMENT.

An act of Congress, approved July 2d, 1862, gave to each State public lands to the amount of 30,000 acres for each of the Senators and Representatives in Congress according to the census of 1860, for the "endowment, support and maintenance of at least one college, where the leading object shall be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, * * *, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions of life."

Under this act, the State of Kansas received 82,313.53 acres of land; and in 1863 established the State Agricultural College, by endowing with these lands Bluemont College, which had been erected near Manhattan, under the auspices of the M. E. Church, but was presented to the State for the purpose named in the act of Congress. Of these lands, 59,967.27 acres are now sold, giving a fund of over \$300,000, which is by law invested in bonds, the interest alone being used for current expenses of the College. There remain unsold 22,346.26 acres of land, lying in Riley, Dickinson, Washington, and Marshall counties, appraised at over \$150,000.

In 1873 the College was reorganized upon a thoroughly industrial basis, with prominence given to practical agriculture and related sciences; and in 1875 the furniture and apparatus of the College were moved to buildings upon the farm of 155 acres, one mile nearer the city of Manhattan. On this fine location, the State has erected buildings valued at \$40,000, and has made an appropriation of \$30,000 for their further extension during the years 1881 and 1882.

OBJECTS.

This College now proposes to carry out the objects of its endowment, in several ways.

First, it gives a substantial education to men and women, in all the walks of life. Such general information and discipline of mind and character as help to make intelligent and useful citizens, are offered in all its departments, while the students are kept in sympathy with the callings of the people.

Second, it teaches the sciences applied to the various industries of farm, shops, and home. Chemistry, botany, entomology, zoology, and mechanics are made prominent means of education to quick observation and accurate judgment. Careful study of the minerals, plants, and animals themselves, illustrates and fixes the daily lesson. At the same time, lessons in agriculture and horticulture show the applications of science; and both are enforced by actual experience.

Third, it trains in the elements of the arts themselves, and imparts such skill as makes the hands ready instruments of thoughtful brains. The drill of the shops, gardens and farm is made part of a general education to usefulness, and insures a means of living to all who make good use of it. At the same time, it preserves habits of industry and manual exertion, and cultivates a taste for rural and domestic pursuits.

Fourth, it strives to increase our experimental knowledge of agriculture and horticulture. So far as means and circumstances permit, experiments are undertaken with a view to more definite results than ordinary experience can give. By this method, the students themselves are trained to a more accurate observation and judgment in these practical tests of principles in farming.

Fifth, it seeks to disseminate such practical truths as have stood the test of scientific inquiry. For this purpose it publishes the weekly *INDUSTRIALIST*; and its officers share in the debates and consultations of farmers and horticulturists throughout the State.

COURSES OF STUDY.

The necessity for so adjusting various branches of a course of study that there shall be as little waste as possible in acquiring both information and discipline, is felt by every teacher. Such a course is not designed to be absolutely inflexible, but to guide the judgment into some definite line of progress from which no mere whim shall turn a student aside.

Parallel courses are offered to both sexes, with such differences as their necessities seem to call for. The following gives the general scope of the two; but fuller explanations are found under *OUTLINE OF INSTRUCTION*:—

FIRST YEAR.

FALL TERM.—Arithmetic.

English Analysis.

Geometrical Drawing.

Industrial.

WINTER TERM.—Book-keeping.

English Structure.

United States History.

Industrial.

SPRING TERM.—Algebra.
English Composition.
Botany, with Drawing.
Industrial.

SECOND YEAR.

FALL TERM.—Algebra completed.
Elementary Chemistry.
Horticulture.
Industrial.

WINTER TERM.—Geometry, with Drawing.
Practical Agriculture or Household Economy and Chemistry.
Organic Chemistry and Mineralogy.
Industrial.

SPRING TERM.—Geometry completed.
Entomology and Anatomy.
Analytical Chemistry or Household Economy.
Industrial.

THIRD YEAR.

FALL TERM.—Trigonometry and Surveying.
Physiology.
General History.
Industrial.

WINTER TERM.—Mechanics, with Drawing.
Agricultural Chemistry.
Rhetoric.
Industrial.

SPRING TERM.—Civil Engineering.
Chemical Physics.
English Literature.
Industrial.

FOURTH YEAR.

FALL TERM.—Agriculture, or Hygiene and Dairying.
Meteorology.
Psychology.
Industrial.

WINTER TERM.—Logic, Deductive and Inductive.
Zoology.
United States Constitution.
Industrial.

SPRING TERM.—Geology.
Botany and Gardening.
Political Economy.
Industrial.

Closely adjusted to the course of study, is industrial training in several of the arts, to which each student is required to devote at least one hour a day. Among these lines of training, each student may select, with the approval of the Faculty. Young men may have Agriculture, Horticulture, Carpentry, Cabinet-making, Iron-work, Printing, or Telegraphy. Young ladies may take Sewing, Printing, Telegraphy, Music, or Scroll-sawing.

CLASS HOURS, 1881-2.

HOURS.		FIRST YEAR.	SECOND YEAR.	THIRD YEAR.	FOURTH YEAR.
FALL TERM, 14 WEEKS.	I.	Arithmetic.	Algebra.	Industrials.	Agriculture.
	II.		Horticulture.	General History.	Meteorology.
	III.	English Analysis.	Industrials.	Physiology.	Psychology.
	IV.	Industrials.	Inorganic Chemistry.	Trigonometry and Surveying.	Hygiene 10 weeks. Dairying 4 weeks.
	V.	Geometrical Drawing.	Chemical Manipulation once a week.	Practice in Surveying.	Industrials.
WINTER TERM, 12 WEEKS.	I.	Industrials.	Agriculture.	Agricultural Chemistry.	Zoology.
	II.	Book-keeping.	Geometry.	Industrials.	Logic.
	III.		Organic Chemistry 6 weeks. Mineralogy.	Rhetoric.	U. S. Constitution.
	IV.	U. S. History.	Blow-pipe Analysis 6 weeks.	Mechanics.	
	V.	English Structure.	Household Chemistry and Economy.	Drawing twice a week.	Industrials.
SPRING TERM, 11 WEEKS.	I.	Drawing three times a week.	Entomology 7 weeks. Anatomy 3 weeks.	English Literature.	Geology.
	II.	Botany.	Geometry with Drawing.	Chemical Physics.	Political Economy.
	III.	Composition.	Analytical Chemistry.		Entomology and Botany.
	IV.	Industrials.	Analytical Chemistry.	Civil Engineering.	
	V.	Algebra.	Household Economy.	Industrials.	Industrials.

All students meet in Chapel at half-past eight o'clock each morning, except Saturday and Sunday. The time from 8:50 A. M. to 1 P. M. is divided into five "hours," as above; and a system of electric bells calls the classes in all the buildings at once.

Public exercises or class rhetorical exercises on every Friday afternoon.

SELECT COURSES.—Persons of suitable age and advancement, who desire to pursue such branches of study as are most directly related to agriculture or other industries, may select such studies, under the advice of the Faculty. Assaying and Pharmaceutical Chemistry may be provided for by special arrangement, when students are qualified to pursue them.

POST-GRADUATE COURSES.—Arrangements can be made for advanced study in the several departments, at any time. Special opportunities for investigation and research will be afforded to resident graduates.

DEGREES.

The degree of Bachelor of Science is conferred upon students who complete the full course of four years and sustain all the examinations.

The degree of Master of Science is conferred upon graduates of three years' standing who give evidence of advancement in the application of science to the arts of practical life, and present an acceptable thesis upon some topic assigned by the Faculty.

OUTLINE OF INSTRUCTION.

PRACTICAL AGRICULTURE.—*Second Year.*—History of agriculture, showing the successive steps by which the art has attained its present position. History and characteristics of breeds; their adaptation to the varying conditions of soil, climate and situation; study of the forms of animals, as shown by the different breeds belonging to the College; the relation of stock-raising to general farming. Cultivation of hoed crops; management of corn and roots with reference to stock-feeding and the growth of the finer grains. The growth of the "tame grasses" in Kansas; the best sorts for the State, and their management, as shown by experience on the College farm and elsewhere. Implements of simple tillage; mechanical principles involved in their construction. Application of labor. Draught; different adjustments, as affecting draught. Use of the dynamometer. Plows for soil and subsoil. Draining; soils that need draining; how to lay out a system of drains.

Fourth Year.—General principles governing the development of domestic animals. The laws of heredity of disease,—of normal, abnormal and acquired characters; atavism; correlation in the development of parts; in-and-in breeding and cross breeding; influences affecting fecundity. The selection and arrangement of the farm with reference to the system to be pursued. Rotation of crops; general advantages of a rotation; the best rotation for the distribution of labor, production of manure, and extermination of weeds; planning farm buildings, barns, piggeries and stables. Manures; how best housed and applied; composting; commercial fertilizers. Agricultural experiments; field and feeding experiments. Stock-feeding and meat production; stall-feeding; soiling. In this, Miles' Stock-breeding is supplemented by a course of lectures.

Books of Reference.—Journals of the Royal Agricultural Society of England, Morton's Cyclopaedia, Low's Practical Agriculture and Domesticated Animals, Fleming's Veterinary Obstetrics, Farmers' Calendar, Allen's American Farm-book, The Complete Grazier, Stephens' Book of the Farm, Thomas' Farm Implements, Waring's Draining for Profit and Health, the reports of our own and other State boards of agriculture, and Short-horn, Jersey and Berkshire Herd-books.

HORTICULTURE.—It is the aim to teach this art from a botanical basis. The student applies his knowledge of the prime facts in botanical physiology to the various operations of the nursery, orchard and garden. Barry's Fruit Garden is used, supplemented by a series of lectures upon the following topics, among others: The scope of Horticulture. General principles of propagation,—by buds, by seeds. Production of improved varieties,—by careful selection of seeds, by interfertilization of known kinds. Perpetuation of valuable sorts of fruits by bud propagation,—budding, grafting, layering, etc. The important points in nursery manipulation. The orchard; conditions of site, soil, exposure, elevation. Special treatment of the different kinds of fruit trees. Pruning. Gathering and storing fruits. Small-fruit culture; lists of varieties suitable for Kansas planting. Vegetable garden; selection and preservation of seed; planting and transplanting. The management and use of the hot-bed and cold-frame. Forest plantations. Wind-breaks. Hedges. Trees and shrubs for ornamental planting.

Books of Reference.—The pomological works of Downing, Warder, and Thomas, Fuller's Small-fruit Culturist, Fuller's Grape Culturist, Henderson's Gardening for Profit and Practical Floriculture, and others. Also the Horticultural Reports of Kansas, Michigan and other States.

BOTANY.—During the course, two terms are given to the study of Botany. In the spring term, first year, the student is familiarized with the basis and aims of botanical classification to a sufficient degree to enable him to appreciate differences and resemblances in the plant kingdom, and is made acquainted with the salient points in plant physiology. Gray's Manual and Lessons is the text-book. In the spring term, fourth year, the intimate structure of plants, a more detailed study of plant physiology, (in the germination of seed, the growth of cellular substance, and the fertilization of the ovule), variation, the improvement of varieties, parasitic fungi, are among the topics studied. The instruction in this part of the course is principally given as lectures. A portion of this term is devoted to the principles of Landscape Gardening.

Although it is in a large degree the aim of this course in Botany to furnish a foundation for the study of applied botany in agriculture and horticulture, the advantages of systematic observation and original investigation are kept in view, and the student anticipates the use of the text-book by the use of his eye and brain,—observing and comparing seeds, leaves, stems, flowers, and other portions of plants, keeping notes of his observations for presentation in the class. This plan is followed through the

course, with each new topic. A good herbarium and a series of charts are used as means of illustration.

Books of Reference.—Gray's Botanical Text-books, Don's History of Dichlamydeous Plants, Darwin's Works, Cooke, Berkeley and Peck on Fungi, Bessey's Botany, Eaton on Ferns, Sullivant and Lesquereux on Mosses, Johnson's How Plants Grow, and others. In Landscape Gardening, the works of Downing, Weidenmann, and Kemp.

CHEMISTRY.—*Inorganic Chemistry*, which occupies fourteen weeks of the second year, includes a consideration of chemical forces and of the laws of chemical combination, with nomenclature and formulæ, and a careful study of the history, manufacture, physical, chemical and physiological properties, tests and uses, of the various elements and their compounds. Especial attention is given to those substances having extended application in the arts. In addition to the usual lecture-room experiments, the student repeats, as far as practicable, all this experimental work at his private work-table.

Organic Chemistry comprises a six weeks' course of lectures upon the theory of organic types and compound radicals, and the preparation and properties of those organic substances most useful to man.

In *Chemical Analysis*, each student has his stand in the Qualitative Laboratory, completely furnished with apparatus and chemicals for his own use. His work includes the analysis of more or less complex mixtures of chemicals, minerals, ores, soils, mineral waters, well waters, etc. The time given to this work is two hours daily for eleven weeks. Text-book, Kedzie's Manual.

AGRICULTURAL CHEMISTRY.—This includes a thorough consideration of the application of chemical principles to the economy of the farm; the origin and formation of soils; the classification and composition of soils; the analysis of soils and their adaptation to purposes of production; the composition and use of manures; composting; chemistry of farm operations, such as plowing, fallowing, draining, etc. Text-book, Johnson's "How Crops Feed."

HOUSEHOLD CHEMISTRY.—A course of lectures on this subject is delivered each year to a class of young ladies. The course embraces the chemistry of cooking; the composition of food; bread; tea, chocolate and coffee; butter and milk; ripening and preservation of fruits; etc.

Books of Reference.—Roscoe's Chemical Works, Eliot and Storer's Manual, Miller's Chemical Works, Fresenius' Qualitative Analysis and Quantitative Analysis, Cairne's Quantitative Analysis, Sutton's Volumetric Analysis, Wanklyn's Water Analysis, Reports of Experiment Stations, Current Scientific Journals.

HOUSEHOLD ECONOMY.—A series of lectures to ladies of the second-year class, accompanied by practical illustration in the kitchen laboratory, continues through a term and a half. These cover the general ground of economical provision for the household,—marketing, cooking, preserving,

order, neatness and beauty in table service, comfort of family, and care of a sick-room. These are supplemented by the lectures upon Household Chemistry and Dairying.

ANATOMY AND PHYSIOLOGY.—*Third Year.*—The study of Physiology is preceded by a course of lectures on Anatomy. In this course, such consideration will be given to the form, structure and location of the different organs as is required for the proper comprehension of Physiology and Hygiene; and, in addition, the external form of domestic animals, particularly the ox and horse, will be studied by the class as a preparation for the study of Stock-breeding. The study of Physiology embraces a thorough consideration of the functions of the organs of the human body, and the relations these sustain to the conditions of health and disease. Among the principal topics discussed, these may be mentioned: foods and digestion; assimilation; secretion and excretion; the circulation of the blood; the nervous system; the special senses; reproduction. Text-book, Martin's Human Body.

Books of Reference.—Dalton's Human Physiology, Carpenter's treatise on Human Physiology, Flint's Physiology of Man, Gray's Anatomy, Fleming's Veterinary Obstetrics.

SPECIAL HYGIENE.—To the ladies of the fourth year, a course of daily lectures is given by the lady superintendent of the sewing room, upon the laws of life and health. The course extends over a period of ten weeks and covers questions pertaining to personal health and the health of the household,—such as food, air, exercise, clothing, temperature of rooms, etc.

ENTOMOLOGY.—This science is studied with especial reference to its economic relations with agriculture and horticulture. A brief course in the principles of classification is followed by a more extended study of the life-history of beneficial and injurious insects, and means of encouragement of one and the control of the other. Here, as in botany, the student is led to form a basis for the study by his own observations. The instruction is presented in the form of lectures. Illustrations are furnished from the individual collections of the students, and from the entomological collections belonging to the College. Charts and drawings from nature are used to illustrate points of value in classification.

Books of Reference.—Packard's Guide to the Study of Insects, Harris' Insects Injurious to Vegetation, Riley's Reports, LeBaron's Reports, Fitch's Reports, Thomas' Reports, Reports of the U. S. Entomologist, Transactions of the American Entomological Society, and others.

ZOOLOGY.—The time devoted to this study is in part given to a view of comparative anatomy and physiology. The latter portion of the term is occupied by a study of the system of zoological classification in present use, accompanied and illustrated by dissections, and the study of fresh, alcoholic and mounted specimens. The instruction is by lectures.

Books of Reference.—Agassiz' Seaside Studies, Cuvier, Baird's North American Birds and North American Mammals, Wilson's Ornithology,

Coues' Key and other ornithological hand-books, Allen's Monographs, Packard's Zoology, Darwin's Works, various works by Verrill, Morse, Smith, Jordan, Gill, and others.

MINERALOGY AND GEOLOGY.—For six weeks in the second year, two hours a day are given to mineralogy. This includes the study of crystallography, with the properties, forms and uses of the principal minerals of the United States. Blow-pipe analysis forms an important part of the course, each student being required to name and identify a large series of minerals. Text-book, Dana's Mineralogy and Lithology.

A term's study in the fourth year gives a view of the causes which have produced geologic changes in the past, of the general arrangement of the earth's crust, and of special peculiarities of various strata. Attention is given to the formation of soils and deposits of valuable minerals, especially in Kansas. Text-book, Dana's Geologic Story.

PHYSICS AND METEOROLOGY.—Two terms' work give an opportunity for experimental study of the laws of heat, light with spectrum analysis, electricity and magnetism, and the relation of these forces to the arts of life. It also includes the constitution of the atmosphere, the measurement of temperature and humidity, atmospheric pressure, and the relation of these to climatology. A full course in meteorological observations is taken, with careful study of instruments and methods. Text-books, Miller's Chemical Physics and Loomis' Meteorology.

Books of Reference.—Deschanel's Physics, Pynchon's Chemical Physics, Ganot's Physics, Tyndall's Heat Considered as a Mode of Motion.

ARITHMETIC.—One term is given to a general review of Arithmetic, the greater part of the time being spent on percentage and its applications. Accuracy and rapidity in computations are required; and, to those deficient in this respect, a thorough drill is given. Original problems, involving the every-day life of students, form a prominent feature in the course.

BOOK-KEEPING.—Beginning with a simple cash account, book-keeping is developed through all the principles of single and double entry. Each student provides a full set of blanks, and keeps a regular set of books, in which accuracy of calculation and posting, and neatness of execution, are regarded as essential as correct understanding of the principles. No text-book is used, but all forms and problems are furnished in the class-room.

ALGEBRA.—Algebra is studied two terms. The first is wholly given to the literal notation. The student is thoroughly drilled in the fundamental rules, as applied to whole, fractional, and exponential quantities. The second term is devoted to the various forms of the equation, and its applications. The equation in its various forms,—simple, quadratic, radical, etc.,—is studied, as an instrument for solving the problems of practical life, in which quantity is an item; for demonstrations of geometrical and trigonometrical theorems; and for the construction of formulas for the use of the engineer and the artisan. Text-book, Thomson's Collegiate Algebra.

Three things are aimed at in the course in Algebra: first, to train the pupil to methods of reasoning; second, to attain facility in methods of operation; third, to secure expertness in the use of algebraic formulas.

GEOMETRY.—Two terms are given to Geometry. In geometrical drawing, the student has already become familiar with geometrical forms and their construction. The first term is devoted to plane geometry. During the second term, solid and spherical geometry are studied in connection with technical drawing. Practical problems, involving the principles demonstrated, are given to the class. Text-book, Olney's Elements. Hand-books of engineering and of various arts are used for reference.

TRIGONOMETRY AND SURVEYING.—The principles of plane trigonometry involved in mensuration and surveying, are first mastered. Surveying includes theory, adjustment and use of instruments; history and methods of U. S. Government surveys; areas of land; dividing land; retracing old lines; platting; topographical surveying; railroad surveying; leveling—section and cross section; computation of earth-work; field practice with transit, compass, chain, level and rod; drawing and ornamentation of plans and profiles. Text-book, Ray's Trigonometry and Surveying.

MECHANICS AND ENGINEERING.—A careful consideration of the laws of motion and force, as exhibited in all kinds of machines, and in various phenomena of nature, occupies a single term. Another term is given to proper study of materials for buildings, their construction and durability; forms of roofs and bridges; and care and use of machinery. Text-books, Peck's Mechanics, Mahan's Civil Engineering.

DRAWING.—This study is taught four terms, two of which are in the first, one in the second, and one in the third year. Students that show special aptitude in this direction are permitted to pursue the study during the remainder of the course.

First Term.—Definitions of lines and geometrical figures; judging and measuring lines and angles; construction of perpendiculars to given lines, of triangles, four-sided figures and polygons, of the circle and its secant lines, of ellipses, and of various geometrical ornaments. Prof. Walter Smith's four books on geometrical drawing are used as text-books.

Second Term.—Free-hand drawing accompanying botany. After the study of numbers 3, 4 and 5 of Prof. Walter Smith's Text-books of Art Education, drawing from nature is taken up. Leaves, flowers and fruits are taken as subjects, and placed in such positions that the perspective will not interfere seriously with a correct perception of form. Each student is required to finish a set of drawings. Lectures on principles and history of ornamentation are given occasionally.

Third Term.—Projection of straight lines and circles; use of drawing board, T-square, and water colors; principles of shades and shadows; principles of parallel and angular perspective; principles of topographical drawing.

Fourth Term.—Projection of the conic sections and other regular curves; intersections of geometrical solids. Each student is required to draw and color a set of plans for a simple farm building, and another set of plans giving details of some farm machine.

Books of Reference.—Warren's Descriptive Geometry, Walter Smith's Manuals on Art Education, Woodward's National Architect, Guild's American Stair-builder, Andre's Hand-book of Topographical Drawing, Davies' Shades and Shadows.

ENGLISH LANGUAGE AND LITERATURE.—*First Year.*—The study of English Grammar is made to serve directly in clear perception and correct expression. Such practice in analysis and parsing as may give the pupils a clear idea of the English sentence in all its parts, is associated with daily exercises in expression and criticism. A careful study of words and their elements,—roots, stems, prefixes, and suffixes,—associating them with their origin and history, continues the course in English. Compound terms in formation and use, distinctions in synonyms, and associated meanings of words, are studied with care. Sentences are also analyzed with reference to their meaning, varieties of expression for the same meaning, shades of thought, and propriety in expression. At the same time, the daily exercises are made a means of training in exact articulation, spelling, writing, and the essentials of good reading. Text-books, Reed and Kellogg's Higher English Lessons, Swinton's Word Analysis.

Principles and methods in English Composition are then taken up, with David J. Hill's Elements of Rhetoric for a text-book. Numerous exercises and revisions familiarize the students with the essentials of neat, legible manuscript, and clear, forcible expression.

Each class meets once every fortnight for drill in elocution.

Third Year.—A term's study of higher Rhetoric is occupied with the principles of clear explanation and convincing argument, as well as the outlines of sound criticism. This is followed by a term spent in the history of English language and literature, with abundant illustrations from the best authors. Students are lead in this way to appreciate the power of our mother-tongue, and at the same time to gain a slight acquaintance with the best thoughts of the world. Students are encouraged and directed in the use of the College library, and are under constant oversight in the expression of their thoughts in writing. Original declamations, carefully prepared, and delivered before the students and Faculty, make a part of the drill in the higher classes.

HISTORY AND POLITICAL ECONOMY.—Ridpath's United States History occupies a term's study in the first year; and special attention is given to the form and growth of the government under which we live. In the fourth year, a careful study of the Constitution of the United States, with Andrews' Manual as a text-book, is made to show the general principles of government, its means and methods, illustrated by historical references. A single term is given to Swinton's Outlines of General History, with especial emphasis upon the world's progress in science, literature and art.

The study of Political Economy in a full term of the fourth year, gives a fair presentation of subjects connected with production, distribution and consumption of wealth. Chapin's *Wayland's Elements* is the text-book; but pains is taken to compare conflicting views and point out sources of information on all sides of vexed questions, without bias or prejudice.

Books of Reference.—Bancroft's *United States*, Hume's, Macaulay's and Greene's *England*, Guizot's *Civilization*, and a good library in general history. In Political Economy, works of Adam Smith, Mill, Fawcett, Cairnes, Walker, Bowen, Carey, and Thompson.

LOGIC AND PHILOSOPHY.—The art of reasoning correctly is aided by a study of systematic logic, both deductive and inductive. Special prominence is given to methods for exact observation and experiment, and correct principles of classification. The previous researches and experiences of the student are made to illustrate these principles. Text-book, Jevon's *Elements of Logic*.

A short course in Psychology gives the general principles of intellectual and moral philosophy. Perception, understanding, reason, feelings and volition, are topics of explanation and analysis. Theories of right and wrong, and correct principles of action, are made the basis of a clear understanding of individual rights and duties. Hopkins' *Outline Study of Man* forms the basis of the course.

Books of Reference.—Mill's, Jevon's and Fowler's *Logic*, Bascom's *Psychology*, Porter's *Human Intellect*, Fairchild's *Moral Philosophy*, Cousin's *The True, the Beautiful and the Good*, and works of Spencer, Hamilton and others.

INDUSTRIAL ARTS.—The training in these departments is designed to be systematic and complete in each, so that any student following a single line diligently through a four years' course, gains the essentials of a trade and a reasonable degree of skill. Those who wish only a general acquaintance with the arts, can take shorter courses in several of them; but all are to select with definite purpose. In the regular course for farmers, agriculture and horticulture both are required as industrials during definite periods connected with their study: certain terms of practice in the carpenter shop are also essential to readiness upon the farm. These will be adjusted to each other as improved facilities and larger classes require.

Young ladies are required to give the necessary time for practice in the kitchen laboratory, and are expected to show some facility in the practice of the sewing-room, though other industrials may occupy their course. Telegraphy and printing are open to ladies, without fees.

In agriculture and horticulture, the practice is made to illustrate and emphasize the teaching, and covers essentially the same ground. Training in the other arts is as follows:—

Carpentry, etc.—All are enrolled as carpenters, and take the same first lessons in sawing, planing and dressing lumber, making mortises, tenons and joints, and in general use and care of tools. Later, one who chooses a

trade is provided with work directly in the line chosen, while the farmer's course provides for general training in a great variety of operations; rather for ingenuity than for skill. In the full course of a carpenter, special instructions are given in the whole range of work, from framing to stair-building. Students are allowed, after attaining sufficient skill, to work upon their own materials, under the advice of the superintendent.

Printing.—Two courses are pursued in this art. In one the student is taught the implements or tools employed in typography, and how to use them; composition; imposition; correcting proof; technical terms; presses and their workings; and the general duties of a first-class workman. Every one is encouraged in the study of the rise and progress of printing and related arts. Habits of accuracy and thoroughness are required in order to advancement. The second course of lessons alternates with those in the first, and embraces instruction in spelling, capitalization, syllabication, punctuation, proof-reading, preparation and criticism of essays, and such other work as will make the student accurate and expert in language. Printed lesson-leaves are used instead of a text-book; but much of the instruction is oral,—such as grows out of the every-day experiences of the office.

The INDUSTRIALIST furnishes an admirable drill to all, but especially to those who take the full course. The printing which the departments of the College require, gives to the advanced student a fair knowledge of the principles and practice of job work.

Books of Reference.—MacKellar's American Printer, Harpel's Typograph, Wilson's Punctuation, Rounds' Printers' Cabinet, Ringwalt's Encyclopedia of Printing, and standard works on grammar and rhetoric.

Telegraphy.—The course of training involves for beginners the characters that compose the alphabet, and combinations of these characters into words and sentences,—attention being paid to spelling and to short and precise expression in messages,—abbreviations, signals, forms of messages, train orders, reports, etc. To the more advanced is given regular line business; as, press reports, messages, cypher messages, and orders in all forms used by prominent telegraph companies, together with the necessary book-keeping, upon exact copies of the blanks in actual use, thus giving the student an understanding of the work of an operator. A portion of the time is devoted to instruction in the use and management of lines, batteries, instruments, etc. The elementary principles of electricity, magnetism, and electro-magnetism, involved in telegraphy, are taught and illustrated by experiments. The more recent inventions relating to the art are discussed and explained.

Books of Reference.—Prescott's Electric Telegraph, Morse's Examination of Telegraphic Apparatus, Culley's Telegraphy, Pope's Hand-book of the Telegraph.

Sewing.—Young ladies are taught in all ordinary forms of sewing with needle and machine, and in cutting, fitting and trimming dresses and other garments. They may furnish materials, and work for their own ad-

vantage during the hour of practice, under the direction of the superintendent.

Instrumental Music.—Provision is made for the teaching of music upon instruments of all sorts. A full course upon the piano or organ extends over four years, including harmony and composition; but students may take lessons for a single term if they choose. The College furnishes an instrument for daily practice, but the teacher depends upon his fees for income. The charge is from six to eight dollars a term for weekly lessons, and from ten to fourteen dollars a term for semi-weekly lessons. Students in classes of two or more can obtain reduced rates, as the number may warrant.

LABOR.

The course of study is framed with especial reference to the wants of laboring men and women; and every encouragement is given to habits of daily manual labor during the College course. Only the one hour of daily practice in the industrial departments is required; but students are encouraged to make use of other opportunities for adding to their ability and means.

The College employs students, when possible, on the farm and in the gardens, shops and offices, paying wages at an average rate of eight cents an hour.

All labor at the College is under the direction of the superintendents of departments, and offers opportunity for increasing skill and efficiency. In regular weekly settlements, the students are required to observe business forms and principles, showing from their daily account when and where the work was performed. A few students who have shown especial efficiency are employed during the summer vacation.

The shops and offices are open in vacant hours for the accommodation of skilled students in work for their own advantage. Students are employed frequently upon the neighboring farms and in the city. Everywhere the student who works, wins respect; and it is a matter of pride to earn one's way as far as possible.

GENERAL DUTIES AND PRIVILEGES.

General good conduct, such as becomes men and women anywhere, is expected of all. Every student is encouraged in the formation of sound character by both precept and example, and expected "upon honor" to maintain a good repute. Failure to do so is met by prompt dismissal. No other rules and regulations are announced.

REGULAR EXERCISES.—Classes are in session every week-day except Saturday, and no student may be absent without excuse. Students enrolled

in any term cannot honorably leave College before the close of term, unless excused beforehand by the Faculty. A full and permanent record of attendance, scholarship and deportment, shows to each student his standing in the College. After each monthly examination, a report of advancement is made to parents; and any student, upon leaving College at the close of a term, may receive a certificate of standing.

Chapel exercises occupy fifteen minutes before the meeting of classes each morning, and unnecessary absence from them is noted in the grades.

Lectures, etc.—Twice in each month the whole body of students gather for a lecture from some member of the Faculty, or for the rhetorical exercises of the third and fourth year classes. On alternate weeks, all the classes meet at the same hour, in separate class-rooms, for exercises in elocution and correct expression.

Every Friday evening a students' prayer-meeting is held in the College Society-room, lead by a member of the Faculty. On the Sabbath, students are expected to attend services at least once in the different churches of the city.

Occasionally during each term, the College Building is opened for a social gathering of Faculty and students, in which music, literary exercises and friendly greeting find place.

VOCAL MUSIC.—Excellent instruction in vocal music, for beginners and for advanced students, is furnished at a very slight expense, under the direction of Prof. Platt, with whom all arrangements for entering these classes may be made. Each class has two lessons a week, at an average expense of one dollar a term.

SOCIETIES.—There are two prosperous literary societies of at least ten years' standing. Both have libraries and meet weekly in their own room in Societies' Hall. The *Alpha Beta* is open to students of both sexes, and holds its meetings Friday afternoon. The *Webster* admits to membership gentlemen only, and meets on Saturday evening.

Members of the Faculty, with advanced students, have a Scientific Club, which meets in the Chemical Laboratory on the first Friday evening of each month.

The Central Kansas Stock-breeders' Association and the Manhattan Horticultural Society have monthly meetings,—usually at the College,—which the students have the privilege of attending.

MEANS OF ILLUSTRATION.

TWO FARMS of 155 and 100 acres. Eighty-five acres in crops; thirty acres in tame grasses; sixty-five acres in prairie pasture and mowing land of native grasses. Samples of special crops and experimental plots in grains, grasses, and forage crops.

A WELL-PLANNED BARN for grain, hay, horses and cattle; and a pig-gery of ten pens, with separate yards.

SHORT-HORN AND JERSEY CATTLE; Berkshire and Poland-China swine.

FARM IMPLEMENTS of approved patterns.

ORCHARDS, containing apples, peaches, pears, plums, cherries and apricots, of many varieties.

SMALL-FRUIT GARDEN, with varieties of blackberries, raspberries, gooseberries, currants and strawberries; and vineyard with fifty varieties of grapes.

FOREST PLANTATION of five acres, containing twenty varieties of trees of from ten to fifteen years' growth.

ORNAMENTAL GROUNDS, set with a variety of evergreen and deciduous trees. Sample rows of ornamental and useful shrubs and herbs, labeled.

VEGETABLE GARDEN, with hot and cold frames and experimental beds. Practice rows for students' budding, grafting, cultivating and pruning.

A SMALL GREENHOUSE, with collection of bedding plants and house plants.

CHEMICAL LABORATORY, with six rooms, fitted with tables and apparatus for a class of forty students; also, physical apparatus and meteorological instruments.

MATHEMATICAL INSTRUMENTS, models and patterns for drawing, and charts for illustration.

CABINETS OF MINERALS AND GEOLOGICAL SPECIMENS, including collections of Prof. Mudge; and growing collections in botany, entomology and zoology, with some interesting illustrations of ethnology.

COLLECTIONS of grains, grasses and forage plants, and of native and foreign woods.

CARPENTER SHOP, with separate benches and tools for twenty students in each class, besides lathe, mortising machine, scroll-saws and general chest of tools for fine work.

SHOP FOR IRON WORK, with forges, vices, drill, etc.

PRINTING-OFFICE, with twenty-five pairs of cases, a good assortment of type, and a half-medium Gordon press.

TELEGRAPH OFFICE, with three miles of line, connecting eighteen branch offices, and thirty instruments.

SEWING ROOMS, with four machines, models and patterns.

KITCHEN LABORATORY, with range, cooking and table utensils, and dining-room furniture.

MUSIC ROOMS, with three pianos, an organ, and other instruments.

LIBRARY AND READING-ROOM, open daily, containing some 3,000 volumes and 150 periodicals.

EXPENSES.

Tuition is free; and no general fee for incidental or contingent expenses is charged. In a few special departments of instruction, the following payments are required in advance:—

In analytical chemistry, students pay three dollars a term for the chemicals and apparatus used in their laboratory practice and analysis.

In the printing-office, young men, in their first year, pay three dollars a term for office expenses. Advanced students have the use of the office for the work performed during industrial hours.

In telegraphy, young men pay three dollars a term for office expenses.

Young ladies are furnished both printing and telegraphy free of expense, these two offices, with the sewing and the cooking departments, being provided especially for their industrial training.

Lessons in instrumental music are from five to fourteen dollars a term, according to the number of lessons.

Vocal music is taught in classes, at an average expense of one dollar a term.

The necessary text-books can be procured in Manhattan, at a cost of from two to five dollars a term.

Board and washing are not furnished by the College. Board can be procured in private families at from \$2.75 to \$3.50 per week, and in some boarding houses for \$1.50 per week. Some students board themselves at even less cost; and rooms for that purpose can be obtained at a rent of from \$1.00 to \$2.50 a month. Washing costs from fifty cents to one dollar a dozen pieces.

Ordinary expenditures, aside from clothing and traveling expenses, range from \$60 to \$150 a year.

EARNINGS.

The labor of the students in the industrial departments is principally a part of their education, and is not paid for, unless the student is employed—outside of required hours of labor—upon work for the profit of the College. Some students are so employed upon the farm, in the gardens or the shops, and about the buildings. This labor, in limited quantities, is paid for at rates, varying with service rendered, from seven to ten cents an hour. The superintendents strive to adjust their work to the necessities of students, and give them the preference in all tasks suitable for their employment. So far as practicable, the work of the shops and offices is turned

to account for their benefit; and the increasing extent of the grounds and sample gardens brings more of such labor.

Many students obtain work in the city or upon neighboring farms, and so pay part of their expenses. Students employed in the shops are allowed to work somewhat for their own profit, in the manufacture of articles for sale or use. In these ways, a few students are able to earn their way through College. The amount so earned will vary with the tact and zeal of the student. The majority must expect to provide by earnings outside of term-time, or from other sources, for the larger part of their expenses. The long summer vacation of three months offers opportunity for farm or other remunerative labor; and no one need despair of gaining an education, if he has the ability to use his opportunities well.

COLLEGE BUILDINGS.

The old Bluemont College and Boarding Hall, situated one mile west of the College grounds, are now devoted to students' rooms. The other buildings, all of Manhattan limestone, answer the following description, the numbers referring to the view opposite:—

1. College, of which the north wing only is completed. This wing is two stories high, 52 by 108 feet in outside dimensions, and contains class-rooms for Practical Agriculture, Drawing, Mathematics and English, the Library, the President's office, and cloak rooms. The central structure of this building, to include chapel, society room, class-rooms, reception room, and offices, will be completed in 1882.

2. Chemical Laboratory, one story high, 36 by 99 and 46 by 75 feet, in form of a cross. It contains eight rooms, occupied by the Department of Chemistry, Physics and Mineralogy, and the Printing-office.

3. Mechanics' Hall, 39 by 103 feet, of two stories, occupied by the Carpenter shop and finishing room, Telegraph office, Music rooms, Sewing rooms, and Kitchen Laboratory.

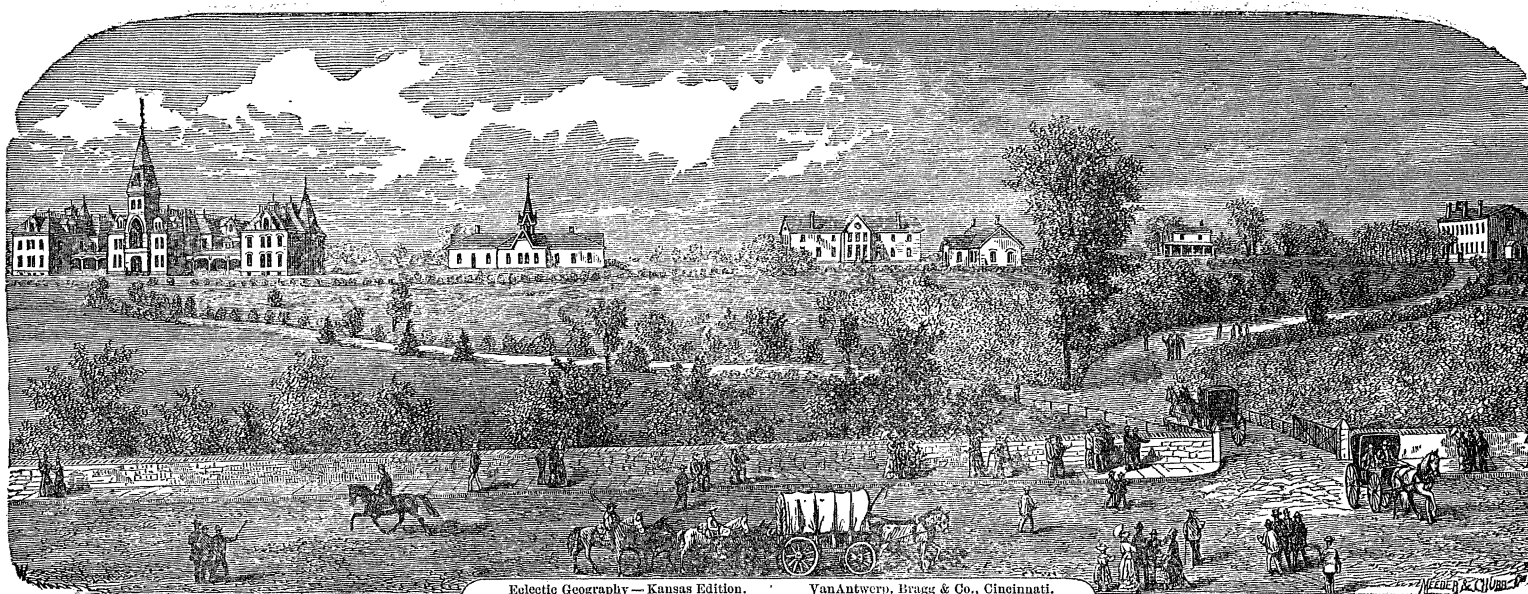
4. Horticultural Hall, 32 by 80 feet, one story and cellar, with cabinet-room, class-room, work-room and storage, with small greenhouse attached.

5. Dwelling of the President.

6. Societies' Hall, 46 by 96 feet, and two stories. It was originally designed for a barn, but is now used for the Chapel, the Society room, the dwelling of the Farm Superintendent, and rooms for the janitor and for a few students.

The Barn is of stone, 48 by 90 feet, with side-hill basement stables, granary, tool-room, etc.

The blacksmith shop, piggery, implement shed, and other out-buildings, are of wood.



Eclectic Geography — Kansas Edition.

VanAntwerp, Bragg & Co., Cincinnati.

1. College, north wing completed.

2. Chemical Laboratory.

3. Mechanics' Hall.

4. Horticultural Hall.

5. President's House.

6. Societies' Hall.

The College is upon high ground one mile west of the city of Manhattan; the proposed entrance to the grounds being nearly in front of the main building, south of the orchards, vineyards, and sample gardens.

VIEW OF COLLEGE BUILDINGS.

TERMS OF ADMISSION.

Applicants for admission at the beginning of the year, in September, must be at least fourteen years of age, and able to pass a satisfactory examination in reading, spelling, writing, arithmetic to percentage, geography, and elements of English grammar. Those applying later in the term must show sufficient advancement to enter the classes already in progress. Every effort should be made to begin with the first day of the term, in order to advance with the classes from the first.

Applicants of mature age and slight advantages may be received upon special conditions, though unable to pass the full examination.

Applicants for advanced standing in the course must pass examination in all the previous studies of the class to be entered; but, if they have pursued such studies in other institutions of similar rank, they may receive credit for their standing in those institutions upon presenting a certificate from the proper officer.

The following questions in arithmetic may serve as a sample of the usual examinations for admission:—

1. Define the terms used in subtraction; and tell how to find any term, the other two being given.
2. Divide six million three hundred forty-six thousand two hundred and sixty-nine by one thousand two hundred and sixty-nine.
3. Find the least common multiple of 15, 35, 16 and 56.
4. Define a fraction. Name the terms of a fraction, and tell what each shows.
5. Find the sum of $\frac{6}{7}$, $\frac{5}{8}$ and $\frac{17}{28}$.
6. From $18\frac{5}{12}$ take $9\frac{13}{18}$.
7. Define a decimal fraction, and write three thousand twenty-eight hundred thousandths.
8. Divide 8,563.125 by 42.75 to three decimal places in quotient.
9. Write the table of long measure, and reduce 2 miles, 65 rods and 2 yards to feet.
10. What will it cost to plow a field 60 rods long and $24\frac{3}{4}$ rods wide, at \$1.35 per acre?

BUSINESS DIRECTORY.

COLLEGE LANDS and all business connected with their sale are in charge of L. R. Elliott, Agent. Full particulars with descriptive map will be furnished upon application at his office, in Manhattan.

LOANS upon school-district and other safe bonds are to be obtained from M. L. Ward, Loan Commissioner, who will furnish all necessary blanks and papers. Residence, Manhattan.

PAYMENTS on account of College funds, and from the College on approved bills, are made at the office of E. B. Purcell, Treasurer, in Manhattan.

BILLS against the College should be presented monthly to the several heads of departments, or to the Secretary of the Board, at the College.

Questions, scientific or practical, concerning the different departments of study or work, may be addressed to the several Professors and Superintendents.

THE INDUSTRIALIST may be addressed through Prof. E. M. Shelton, Managing Editor. Subscriptions are received by Sup't A. A. Stewart.

DONATIONS for the Library or Museums should be sent to Prof. Ward, Librarian, or to Profs. Failyer and Popenoe, Committee on Museums.

GENERAL INFORMATION concerning the College and its work,—studies, examinations, grades, boarding places, etc.,—may be obtained at the office of the President.

CALENDAR.

1881.

SPRING TERM,—March 28th to June 8th.
June 8th, Commencement.

1881-2.

FALL TERM,—September 8th to December 16th.
WINTER TERM,—January 3d to March 24th.
SPRING TERM,—March 27th to June 7th.
June 7th, Commencement.

1882-3.

FALL TERM,—September 14th to December 21st.